DOCUMENT RESUME

ED 239 008 UD 023 316

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TITLE Mandating Educational Effectiveness in Chicago.
PUB DATE 83
NOTE 52p.; Paper presented at the annual meeting of the American Educational Research Association (Montreal, Canada, April 1983).
PUB TYPE Information Analyses (070) -- Reports - Descriptive (141) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC03 Plus Postage.
DESCRIPTORS Curriculum; Elementary Secondary Education; Expectation; Grouping (Instructional Purposes); Instruction; *Performance Factors; Principals; *Program Implementation; *Research Utilization; *School Effectiveness; School Organization; *Teacher Effectiveness
IDENTIFIERS *Chicago Mastery Learning Reading Program; *Illinois (Chicago)

ABSTRACT

In contrast to early research (such as Coleman's) that concluded schools could not override influences of the home environment, more current research indicates that schools can make a difference. This paper summarizes those research findings (emphasizing the limitations of the research from the practitioner's perspective) and relates them to new policies and practices implemented in the Chicago Public Schools. Specifically, the author discusses the role of expectations, curriculum and instruction, school grouping practices, activities of effective principals, and school organization. These variables are described in the light of research findings as well as how they relate to the implementation of Chicago's new promotion policy, graded structure, and the Chicago Mastery Learning Reading Program. This paper argues that school systems can benefit from educational research, if they carefully develop instructional materials, programs, and policies in such a way that research findings are incorporated into instructional obligations that are clearly defined for both teachers and principals. (CMG)

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Michael Katims

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Paper presented at the annual meeting of the American Educational Research Assocation, Montreal, Canada, April 1983.

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The publication of Coleman's (1966) massive study of schooling in America gave little impetus to school improvement efforts. This study, which was designed to identify the differential effects of schools and school practices, concluded that school effects were non-existent: that school achievement indices were far more reflective of the home environment than of the effects from the activities of students, teachers, and principals in schools. For schools serving students from disadvantaged backgrounds, which includes most urban school systems, Coleman's "explanation" offered an excuse for low achievement rather than a motivation for change.

More recently, however, continued research on the effects of schools and classrooms has begun to portray a more optimistic picture of education which does carry a mandate for change. Observational studies conducted within classrooms are identifying consistent sets of teacher behaviors and classroom characteristics which relate to student achievement. The clear implication of this research is that <u>any</u> teacher who uses the appropriate teaching behaviors and maintains the necessary classroom characteristics will produce successful student achievement, even with previously unsuccessful students. Similarly, continued investigation of school effects data has revealed a statistically significant number of schools which do succeed beyond expectations--schools which, in Ronald Edmunds' (1979) words, "eliminate the relationship between successful school performance and family background." Analyses of these schools in a number of different studies have revealed a consistent set of school characteristics which are related to student achievement. Again, the clear implication is that <u>any</u> school which maintains these necessary characteristics can be successful, even schools which have not previously been so.

Now there is an impetus to school improvement. In public school systems across the country, educators and researchers are trying to find ways to implement this new knowledge about teaching and schooling in the improvement

process. At conferences, in workshops, and in inservice training programs, practitioners are listening to the recital of a new catechism of effectiveness. The goal of these presentations is to change teachers' and principals' understanding of the educational process and their roles in it, in order to motivate them to make changes in their beliefs and behaviors. This approach to school improvement is a variation of what Levine (1982) describes as "incremental school reform," which he distinguishes from "fundamental school reform." Though Levine's discussion of these two basic classifications of school improvement efforts is more substantive than theoretical, the distinction is useful for separating different philosophies as well as different methods of school improvement.

By fundamental school reform, Levine refers to "attempts to radically improve the effectiveness of schools" by extensive changes in school practice. These changes are fundamental in that they involve the entire school in a redefinition of goals, methods, procedures, and beliefs. Incremental school reform, on the other hand, refers to attempts to change single or clustered aspects of curricula and instruction in order to bring about a series of (small) improvements without requiring extensive retraining of staff or wholesale revisions in materials and methods. To paraphrase, one approach assumes that by fine-tuning the current system in a series of steps, improvement will be achieved gradually, while the other approach assumes that it is necessary to redesign the system so as to eliminate current problems and learn from past mistakes.

The various workshop and staff development approaches to using school effects research in school improvement represent incremental reform efforts on three distinct conceptual levels: The individual, the school, and the district. Within the individual, the workshop affects school improvement to the extent that the practitioner changes practices as a result of changes in understanding

and attitude. Since effective teaching and instructional leadership require considerably more than these affective and cognitive characteristics, it is reasonable to expect that only increments of change and not fundamental change will be enacted and sustained. At the school level, where effectiveness depends on the consistency of quality instruction throughout a building, the probability remains that even in an energetic and capable faculty, a few will remain unaffected. Those teachers who do not believe or do not act will inhibit the school improvement to increments approaching a limit. At the level of the school district, the workshop approach to school reform is also incremental, but even less likely to have noticeable effect.

Because of the chronically low achievement in the Chicago Public Schools, and more importantly, because of the availability of an instruction tool believed to be capable of bringing effective instruction into each classroom, Chicago opted for fundamental school reform in the summer of 1981. Reporting to the Board of Education that over 300 of Chicago's 430 elementary schools were achieving below national norms and that average Chicago graduates were one and a half years below norm, the Superintendent recommended sweeping changes in organization and instruction for Chicago's elementary schools. These included:

1) The return to a graded structure: Previously the Chicago Public Schools had been ungraded, using a continuous progress system of school organization, with students identified by age and reading level. This change required all schools to be reorganized.

2) The implementation of the Chicago Mastery Learning Reading Program (CMLRP): Previously the Chicago Public Schools had used a centralized system of criterion-referenced tests but locally determined instructional systems. Now all students in the regular program of instruction were required to use the CMLRP as the basis of instruction and promotion. This change required all students and teachers to become familiar with a new instructional system, all principals to become familiar with a new monitoring/management system, and all schools to be organized on quite different instructional principles than under the continuous progress system.

3) A new promotion policy: For the first time in years, children who could not work at the appropriate level and at a mastery level of success were retained for an additional year of instruction. This change required an atypical orientation toward the policies by teachers and principals.

The research on school effectiveness, and the implied potential for generalized school success, was influential in motivating the Board of Education to adopt these sweeping changes in policy and practice. But it was the CMLRP which determined the timing and the nature of this extensive school reform effort. Although the CMLRP is not based on school effectiveness research, it is based on both a theoretical (Bloom, 1976) and a heuristic definition of quality instruction. The program started as an experimental R & D project designed to put Bloom's theory into practice. After seven years of successful field-testing (Smith & Wick, 1976; Jones et al., 1979), experimentation (Katims et al., 1977), and field-test implementations in summer school (Jones & Katims, 1980; Wertsch, 1978), in a pilot school (Katims & Jones, 1981; Wertsch, 1980), and in a district in Brooklyn, New York (Arricale, 1983), the Board of Education was convinced that this teaching tool could be instrumental in bringing effectiveness to each classroom and school.

As part of the writing of the new policies and preparation for implementation, Chicago staff reviewed the literature on effectiveness. This was done to take advantage of any additional information or perspective which the research might provide and to assure congruence between the policy/program and the research findings. This review showed a marked similarity between what the research indicates and what had been worked out heuristically in the field-testing of the CMLRP. However, the review also revealed an interesting anomaly: that while the Chicago school improvement effort was based on a particular curriculum/instruction system with a particular framework for school organization, neither classroom nor school effectiveness research supports curriculum or school organizations variables as important to success. Effectiveness, according to the research, is attainable within any organization arrangement and through the use of any of a number of curriculum/instructional tools.

In light of Chicago's experience, these findings, or lack of findings, are

curious. It was, in fact, the changes in curriculum and organization in Chicago which led to improvements in the effectiveness characteristics touted by the research. The purpose of this paper is to describe Chicago's program and policies as they were implemented by school staffs and to relate these activities of teachers and principals to the characteristics of classroom and school effectiveness. The thesis of the paper, and of Chicago's system, is that to improve school effectiveness, it is necessary to provide appropriate support to practitioners, rather than mere mandates and exhortations. It is argued that within classrooms, this support must involve the curriculum and instructional tools with which the teacher is to be effective, and that within schools, it is the building instructional organization which supports effectiveness. It is not argued that the CMLRP is the only tool which can improve teaching nor that the organizational arrangements favored by the CMLRP are the only ones which can work. But it is argued that school effectiveness involves the efficient coordination of curriculum/instruction, teaching, building organization, and school management. The conclusion is that practice will fail without such coordination across the conceptual levels of schooling and that research will be inadequate as a guide to practice as long as it treats these different dimensions in isolation.

The organization of the paper is to discuss the research on classroom and school effectiveness first, emphasizing the limits of the research from the practitioner's perspective. Then the CMLRP and the promotion policy are described, followed by an analysis of the activities of school staffs in implementation and the relationship between these activities and the characteristics of effectiveness. The paper concludes with a discussion of the implications of the Chicago experience for research on effectiveness and the practice of schooling.

Research on Educational Effectiveness

Research on Classroom Effectiveness

Prior to the 1970s, classroom investigations followed the dominant input-output model of educational research. The goal was to predict outputs, or student achievement, in terms of relevant school inputs, primarily the characteristics of teachers and students. Ideally, the research was expected to reveal some critical characteristics of teachers which could produce improved levels of achievement with any type of student. Wouldn't life have been simple if this were true. Summing up this research and its implications, Madaus et al. (1980) state that

> ...one looks in vain for evidence of a consistent and significant relation between any teacher trait and student achievement. The search for the teacher personality characteristics that are consistently related to pupil achievement had not been any more successful.

Citing Hanushek (1978), they report a similar lack of a relation between either a teacher's experience or graduate education on student achievement.

During the past decade, researchers moved into the classroom to gather information on the process of teaching: what students and teachers actually do in the classroom. This research uses observational methods to quantify and measure the aspects of classroom life which affect instruction and to relate these measurements to indices of achievement. The most referenced of these studies are the Texas Teacher Effectiveness Project, the Beginning Teacher Evaluation Study, and the Follow Through Classroom Observation Evaluation. However, in addition to these large-scale studies, there are numerous other correlational studies and follow-up experiments as well. Unlike the previous generation of research, these studies are revealing a consistent set of relationships between classroom processes and student achievement.

Summarizing the implications of these discovered relationships, Jere Brophy (1982), one of the standard-bearers of the new classroom research, states that

the research has disabused the educational community from the old notion that academic achievement is unrelated to the quality of instruction. It has done so "by establishing that some teachers are reliably more effective than others in producing student learning gains on standardized tests of basic skills, even when students' initial achievement levels are taken into account." Furthermore, the research is capable of accounting for these differences in terms of a fairly short and highly agreed-upon list of teacher characteristics or behaviors associated with student success. Brophy finds the research encouraging because it demonstrates that all children, including inner city children, can learn effectively. And though he cautions that the instructional implications of this research are not easy to implement, Brophy still thinks that educators should be aware of these findings because "the instructional implications are generally applicable, because they have been derived from observation of typical public school teachers and typical students engaged in ordinary school studies."

Sharing with Brophy a belief both in the potential for citywide student achievement and in the attendant obligations on school systems, staff in Chicago did review and consider the implications of the new classroom research. The purpose of this review was to aid the development of the new instructional policies as well as the guidelines and training to assist school staffs in implementation. Because the task was to write concrete rules, regulations, and guidelines for school organization, instruction, instructional monitoring, and promotion/retention, the perspective taken in reviewing the research was considerably different from an academic review. From this practical perspective, the research sometimes seems simplistic or exasperating, yet at other times, it seems quite clear and direct in its implications. The purpose of this section is to briefly recount the findings and to analyze these in terms of the practical problems and experiences of Chicago staff in attempting to implement classroom effectiveness.

Because of what Berliner (1979) describes as an extraordinary "convergence of thought about variables or concepts that can guide classroom practice," it is easy to find packaged reviews and discussion of the literature. Two of these are sufficient to show the similarities: Berliner's (1979) "Using Research in Teaching for the Improvement of Classroom Practice," and Brophy's (1982) "Successful Teaching Strategies for the Inner-City Child." Both articles organize the characteristics of effectiveness into two basic dimensions with a number of facets: (1) "Opportunity to Learn," which is primarily conceived in terms of quantities of instructional time and teaching, and (2) "Academic Learning Time," which is a measure of the proportion of the total time in which the child was successfully engaged in learning, and, of course, the things that the teacher does to make this happen.

Brophy's list of characteristics is less abstract and more focused on the teacher's perspective than the other. In Brophy's portrayal, effective teachers start with a different view or belief about the opportunity to learn. They perceive that student success is a product of the quantity and quality of instruction, so they act to provide these. In popular terms, they expect more of their students because they define their role as one of producing instruction and achievement. Effective teachers provide more opportunity to learn by:

- developing efficient classroom organization and management routines
- using time with more active teaching, including explaining, demonstrating, guiding student practice, and providing academic feedback (interacting more with students on academic tasks)
- planning lessons so that the curriculum pace can be maximized while still assuring a high level of success on daily activities and quizzes
- maintaining a supportive but firm learning environment.

Berliner states essentially the same characteristics from a more abstract and policy-oriented point of view. "Opportunity to learn" is fundamental in this conception and is defined in terms of two characteristics: (1) "Test - Curriculum Congruence," or the relationship between what is being taught and

what is being tested, and (2) "Content Coverage," or the proportion of the prescribed curriculum which is taught and mastered by students. To achieve this opportunity to learn, students must receive adequate "academic learning time" which is dependent upon:

1) Allocated Time - if insufficient time is allotted for student learning, they will not have opportunity.
2) Engaged Time - if students are not participating in instruction, it is irrelevant how much time is allocated.
3) Success Rate - if students do not understand and master curricula, it does not matter how much of it they cover.
4) Direct Instruction - a combination of all of the behaviors of teachers and students which achieve successful academic learning time.

Obviously, Berliner's view is more that of a classroom observer looking for the early indicators of success than of a teacher attempting to achieve them.

Among these characteristics, the one that seems to have most surprised the researchers is the relative importance of student success rate, what Berliner calls "a relatively overlooked concept." This was no surprise to CMLRP staff, however, because in the development and field-testing of the instructional materials, maintaining daily student success had proven essential to obtaining the results predicted by mastery learning theory. The major idea underlying the Chicago Public School policies is that all efforts at classroom and school improvement will fail if teachers are not provided with the tools for teaching effectively, that is, for maintaining high levels of student success and an adequate pace through the curriculum. The teacher is responsible for instruction, but the maintainance of effective classroom characteristics must be assisted through policy, instructional materials, and school organization. Thus, to the practitioner, the review of effectiveness research reveals both a dissatisfaction with some of the answers provided by the research and a curiosity about some of the questions never asked. A few of the points of discussion are:

1. Expectations: Nothing about the new research galls practitioners as much as the discussion of expectations. Every study of effectiveness declares that

effective teachers and principals "expect" more of their students. Of course they do; they expect their students to learn because these students usually demonstrate success. Teachers of students who generally do not succeed have equally accurate, if not equally high, expectations. These teachers know that they cannot create high achievers by changing their attitude. In a modernized model proposing mechanisms for relating expectations to achievement, Cooper (1979) says that at most, teacher expectations sustain pre-existing individual differences by influencing the nature, timing, warmth, and academic values of the teacher's efforts and interactions with students. Administrators and researchers will be more effective at changing teachers' expectations if they assist the teachers in changing their behaviors toward and with their students.

2. Curriculum and Instruction: One of the interesting blind spots of the research on classroom effectiveness is that there is no attempt to connect activities of instruction to elements of curriculum. Yet this relationship seems critical in terms of both opportunity to learn and academic learning time. One of the elements of opportunity to learn is the relationship of the curriculum/instruction to the test that is assessing effectiveness. All of the studies of classroom and school effectiveness utilize standardized tests of achievement, yet there is never an attempt to take into account the degree of congruence between the specific curriculum teachers are using and gains on those tests. If a teacher is actively teaching through a mandated or self-developed curriculum and obtaining student success, but there is little relationship between that curriculum and the test, both the teacher and the researcher will be frustrated. And studies that cross curricula without controlling for it must be suspect.

Not only do curricula differ in what they teach, but also in the organization of instruction for achieving the curriculum objectives. These different organizations of instruction can either enhance the capability of the teacher to effect good instruction, or they can aggravate those factors which interfere

with instruction. For example, the CMLRP is based on Bloom's (1979) notion of the quality of instruction, which in addition to specifying the teaching characteristics previously described, calls for a particular organization of curriculum: the organization of curriculum into sequential and hierarchical learning tasks, the grouping of curriculum objectives into learning units, and the systematic use of academic feedback and corrective instruction within units. When these curriculum characteristics are achieved, Bloom posits both increased student success rate and a decrease in the time needed to learn, because students accumulate cognitive prerequisites as they proceed through learning units. If these changes in students can be achieved with effective use of curriculum materials, obviously the teacher's capability to achieve effectiveness will be improved. Certainly, any curriculum or instructional materials which make it easier for students to master material in less time or for teachers to identify and meet individual student learning needs, will make it easier for the teacher to be effective.

On the other side, there must be numerous curriculum/instruction systems which are not easy for the teacher to understand or use, do not meet student needs within the instructional content, or which take too much time to do so. These difficulties could overcome even the most dedicated teacher's efforts and expectations. Therefore, while it may be true that there are stable differences in effectiveness among teachers independent of curriculum materials, considering the general dependence of teachers on text and other materials (Goodlad, 1983), it is unlikely that these differences can be eliminated without material assistance. Research is badly needed which connects these two dimensions of teaching -- the "what" and the "how" of instruction -- so that school personnel can develop the tools which will help all teachers to teach most effectively.

3. School Grouping Practice: In addition to the observed differences in teacher effectiveness being stable and independent of variations in student

initial ability, these differences, according to Brophy, are also independent of changes "in class size and composition, group dynamics and other factors unique to certain classes." Again, this means that some teachers are effective with any combination of group characteristics. That is not to say, however, that some combinations of group characteristics are not easier for teachers to instruct more effectively than other combinations of characteristics. In fact, when thinking about what is required of the teacher to be effective with a group, it seems that success is a direct function of the characteristics of the group and the adequacy of the instructional plan to meet the learning needs of the students in the group.

The fundamental tension in teaching is between content coverage and success rate of the group. To increase both individual and group success rate, the teacher must do more directed instruction (demonstration, explanation, questioning, error correction) and provide more practice for students; this takes more time and means that students proceed through the curriculum more slowly, covering less content. For high ability students who need little instructional assistance, there is ample time. But as the mean ability level of the group decreases, the teacher must sacrifice success rate or content coverage unless additional time can be allocated. Similarly, if the class size increases, the teacher requires additional interaction time with students, which in turn requires additional allocated time to insure content coverage. And it seems logical that if some groups will be larger than others (even by a few students), and if some groups will have greater allocated instructional time than others, that decisions about the group makeup should be based on an estimate of student needs or abilities.

In our practical experience, the size of the group, the mean ability relative to the norm, and the variability, or homogeneity of the instructional group, profoundly affected the effectiveness of the teaching. Yet much of the research ignores this critical dimension which impinges on classroom effectiveness.

It seems likely that when Rosenshine (1977) fails to detect a stability in teacher effects as measured by residual achievement gain scores from year to year, it is precisely because he fails to account for the differential effect of various combinations of group characteristics.

Among the studies of grouping practices, the evidence has been inconclusive. Calfee and Brown (1979) report no wholesale improvements on the basis of grouping students by ability, but they do point out that where grouping provided some special benefit, there were "substantial modifications of methods and materials." This concurs with Cronbach and Snow (1977), who speculate that "variation in interclass grouping is likely to benefit students only insofar as instructional treatments are modified to take advantage of the group arrangements." In Chicago's new system, teachers and principals can coordinate grouping decisions and instructional plans in order to meet student needs and distribute the teaching burden. It is an assumption of the Chicago program that some systematic connection between grouping and instruction is necessary if classroom effectiveness is to improve on a scale wide enough to affect school and district effectiveness.

To summarize, a review of classroom effectiveness research proved quite valuable to Chicago in validating the decision to use the CMLRP and in determining the essential parameters of the promotion policy. But the research will be of much more value, to Chicago and to education generally, if the emerging knowledge about teaching is connected both to research on curriculum and instruction at one end, and to research on school organization at the other end.

Research on School Effectiveness

The new research on effective schools is quite similar to that on effective teachers, both in design and implications. Following the pessimistic findings

of the Coleman report, a number of researchers (Weber, 1971; Edmunds, 1978; Brookover et al., 1979; Venesky & Winfield, 1979) took a different approach to the search for school effects. Starting with large citywide and statewide data sets (including some of Coleman's), these researchers identified a subset of schools which are outliers. These are schools which demonstrate high achievement despite the fact that they serve children from whom low achievement is usually expected. Then, in contrast to Coleman's method, the researchers went into these schools to see what was going on: they observed and interviewed teachers and principals, as well as students and parents, to find out what these schools were doing to achieve such unexpected results. The logic of this research is that if the results from these schools do not depend on student inputs, but on the behaviors of teachers and principals, then other less effective schools can be made effective by training staff to duplicate those behaviors.

As in the case with the research on classroom effectiveness, the various school effects studies, research reviews, and syntheses are highly convergent in both findings and implications. A consistent set of school factors or characteristics has emerged from these studies, pointing to the conclusion that school achievement is under the control of the school and not a function of home environment variables. Those schools, even inner city schools, which maintain the effectiveness characteristics will be effective, while those schools that do not, even schools in affluent neighborhoods, will not be effective. Therefore, the obligation on school systems is to insure that each school maintains effectiveness characteristics, in which case each school will achieve success.

Many school systems are now trying to implement school effectiveness directly, using staff development projects designed to acquaint teachers and

principals with the research findings and to encourage them to change their habits and practices so as to achieve the characteristics of effectiveness. Chicago, too, has a School Effectiveness Project designed to funnel resources and support to those schools at the bottom of the achievement totem pole. As indicated in the previous section, however, Chicago rejected this as the sole approach to citywide improvement for two reasons: (1) a belief that school effectiveness should be the fundamental focus of every school as represented in the basic program of instruction, and (2) a belief that school effectiveness is a function of classroom effectiveness, and that to improve classrooms, teachers require concrete material support. Still, this literature was reviewed to insure that the proposed program was consistent with models of effective schools and to refine implementation guidelines for principals and teachers. As was the case with the classroom literature, this review revealed considerable support for the planned changes, but it also proved intriguing not for what answers it provided but for what questions had not been asked.

One of the reasons for the high degree of agreement among researchers, and one reason the research seems to have such little practical value, is that the conclusions are stated at quite a general level of abstraction. Based on his School Improvement Project in New York, Ron Edmunds (1979) reduces the list to five composite factors summarizing attitude, behaviors, and practices: (1) Administrative Style, (2) School Climate, (3) School Emphasis on Basic Skills, (4) Teacher Expectations, and (5) Continuous Assessment of Student Progress. Clark et al. (1980) present the data in terms of six variable clusters of which three do not distinguish effective from ineffective schools: finance, resources and facilities, and community resources (though effective schools show more parent involvement). The remaining three variable clusters seem to determine school effectiveness:

1) Leadership: What the principal believes about urban education and his/her expectations for student and teacher success is one dimension of leadership. The other dimension consists of the behaviors of the principal (or designated instructional leader). In effective schools, the principal simply does more: observationally monitors teachers, monitors pupil progress, actively determines the details of the instructional program, maximizes resources and other support for teachers, and maintains an academic orientation and supportive learning climate in the school.

2) Curriculum and Instruction: Effective schools have clearly stated instructional objectives and goals, maintain structured learning environments, and meet individual learning needs, though no specific organization or strategy seems to assure success.

3) Teaching Personnel: Effective schools support teachers through reductions in adult/child ratios where possible and through appropriate staff development/inservice training sessions that are specific and related to the school's goals and instructional program.

The interpretations of Austin (1979), Edmunds (1979), and Sweeney (1982) emphasize the same basic features. The effective school starts with the principal who, through a combination of expectations, charisma, knowledge, and power, insures that teachers have high expectations, that the majority of class time is focused on academics and instruction, and that the progress of individual students is monitored closely so that changes can be made to facilitate individual learning. Teachers in effective schools believe that all their students can learn and assume the responsibility of teaching them, thereby accepting the principle of accountability. During the school day, both classrooms and schools are orderly, with time and attention focused on academic instruction. Individual student progress is closely monitored, usually with criterion-referenced evaluation, and efforts are made to adapt instruction to meet individual needs. As a result, teachers, students, and parents are more satisfied.

These studies are invaluable to public education for providing the empirical evidence which supports our intuition that schools do have effects independent

of financial considerations. But the lists of success correlates are hardly guides to either practitioners or policymakers. Partly because the research does not distinguish between classroom and school effects, this literature contributes nothing new to the discussion of classroom effectiveness. However, it does serve a useful purpose in highlighting the role of the principal. The research on school effectiveness as well as that on school improvement (Lieberman & Miller, 1981) and on program implementation (Fullan & Pomfret, 1977; Leithwood & Montgomery, 1982) focuses on the importance of the principal in the operation of a successful school. Therefore, the later discussion of Chicago's program and policies will highlight the ways in which Chicago principals lead the school improvement effort through building organization and goals, instructional monitoring of teachers and students, and the defining of educational interventions. Because of the instructional qualities of the CMLRP and the precision with which it enables principals to monitor and adjust the instructional program, many more principals can exhibit the behaviors of effective principals when using this program. But Chicago's efforts would be enhanced, and the research would portray a more illuminating picture, if it shed light on a few additional questions:

1. <u>How do effective principals get things done</u>? After much repetition, the phrase "instructional leadership" has taken on an apparent cohesiveness that is quite misleading because it leaves the impression that leadership is a singular characteristic. But as Morris (1982) points out, "the principal's time is typically spent in many activities of very short duration, with considerable variety and sudden shifts of gears throughout the school day." Thinking in terms of thousands of "activities of very short duration" over the course of the school year, one sees that the differences between effective and ineffective principals are not holistic, but molecular. Effective principals

manage to devote more of these short moments and small interactions to instructional issues than the typical principal who spends more of his/her time on administrative tasks. As the proportion of appropriate time or activities increases, so does the probability that these efforts will achieve effectiveness.

It is important to note that this information is not surprising to principals, even those described as less effective. They know that it is important to devote time and attention to teachers and the instructional program; what they do not know is how to get the time. In a study of principal time allocations, Howell (1981) reports that almost three-quarters of the principal's time is taken up with office and non-classroom "other" activities. Seifert and Beck (1981) report in a survey of elementary principals that though 81% of them see instruction as their number one duty, and 62% of them call themselves strong leaders, most agreed that less than half of their time is spent on instruction. This discrepancy is reflected in the fact that only 31% of the teachers in these schools agreed that instruction is the principal's top priority.

What those less effective principals want to know is <u>how</u> their more effective peers manage to clear away the administrative tasks that interefere with the instructional role. This is a critical question because if in effective schools there are no discipline problems, or unhappy parent conferences, or necessary scenes with teachers, or demands for administrative monitoring reports--then principals will feel justified in resisting the inevitable truth of school effectiveness studies. The problem here is one of causality; the less effective principal is arguing that he/she would also be effective in <u>that</u> successful site. Therefore, before stressing the leadership point, researchers would do well to answer the question: which comes first, the effective principal or the effective school?

2. How do effective principals help teachers? One of the curiosities about effective school research it that it does not distinguish between classroom and school effects. That is, in effective schools, student achievement is portrayed as a result of effective teaching, with tne principal serving to somehow improve teaching through expectations, monitoring, and staff development. Within this portrayal, a school with an excellent faculty could produce high achievement independent of the principal, while conversely, a school with the weakest faculty might be impervious to even the best principal. The point is not lost on those principals categorized as less effective.

Again, the question is one of causality. It may well be that effective principals are able to provide staff development which is useful not because of any particular instructional expertise, but because the needs are so minimal. Similarly, it may be that effective principals monitor student progress more closely because there is progress and the problems detected are few and solvable. And, of course, when teachers are task-oriented and effective, it is far easier for principals to maintain expectations and the push for achievement recommended in the literature. Teacher effects are calculated on residual student gains, taking into account the students' expected gain as indicated by pre-scores. For the school effects research to be useful and convincing, it will be necessary to devise methodologies for calculating principal effects in terms of some residual classroom gains taking into account what would have been expected from each teacher based on past performance.

3. Why is curriculum unimportant? As was the case with classroom level research, no particular curricula, instructional materials, or instructional strategies emerge as particularly related to success. Yet the feeling persists that though some staff and principals can work with any curriculum and instruction, some of these must be more conducive to instructional leadership than others. In a Philadelphia study of effective schools (Kean, 1979), principals

who were also reading specialists had students who exhibited more reading growth. Because of their expertise, these principals were able to provide staff development assistance related to identified instructional problems. It must be the case that some curriculum/instruction programs make it easier for a greater proportion of principals to be instructional experts. Research specifically designed to cut across instructional approaches is needed to determine if this possibility is true and to identify features of programs that facilitate instructional leadership.

4. Why is school organization unimportant? In the school effects research, as in the classroom research, building organizational arrangements do not emerge as important for success. Effective principals do involve themselves in decisions about which students are grouped together with which teachers (Leithwood & Montgomery, 1982), but there are no particular strategies or arrangements which appear as more effective than others. However, these results only address the observed importance of organizational variables in a limited, narrowly selected sample of schools. Erickson (1979) speculates that "organizational ineptitude often lies at the root of what is commonly characterized as pedagogical failure," and that

> it is possible that if school level and district level organizational variables were manipulated more rationally, in careful consideration of their direct and indirect effects, the effects would be measurable and consequential. (p. 12)

Research designed to highlight the effects of different organizational structures is required to truly examine the importance of this dimension as well as to provide guidance to staffs in making the organizational decisions which can facilitate effectiveness.

To summarize, a policy- and practice-oriented review of school effectiveness provides motives for school improvement, but little in the way of guidelines for implementing an improvement effort. Because the research is based on a specially

selected and relatively homogeneous population of schools, the variability of practices, methods, and materials is too limited to provide information about these dimensions. And because the research does not trace individual schools over a period of time and change, indicating either improvemnnt or decline, it provides little information about the causal nature of the identified relationships. Nonetheless, the research does pinpoint the principal as a key to improvement and effectiveness, and it is this point of the research that served to define important aspects of Chicago's policy and program which will be described next.

The Chicago Mandate for School and Classroom Effectiveness

The purpose of Chicago's new policies was to establish standards: standards of achievement, of instruction, and of educational progress which could be clearly understood by parents, students, teachers, principals, and administrators. The goal was to improve the conditions of teaching and schooling so that Chicago students could achieve at least at the rate of national levels, and perhaps beyond that to the levels hypothesized by the mastery learning theory upon which Chicago's system and philosophy are based. All the changes in organization, instruction, and promotion are contained in a deceptively simple document, The Chicago Public Schools' Promotion Policy K-12.* As the fundamental statement about the elementary instruction and promotion policy of a major urban school district, this pamphlet is unique, not only for its brevity but also for its simple assumption that almost all of the children in the city will succeed if teachers and principals do as the policy requires. This is the assumption of mastery learning theory, as developed by Dr. Benjamin S. Bloom (1976) at the University of Chicago. The CMLRP, which is the instructional foundation of the

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* 1981 edition

promotion policy, is based on mastery learning theory and was developed in practical settings to achieve the results predicted by Dr. Bloom. It is a major thesis of this paper and of the promotion policy that successful mandate of outcomes requires considerable and appropriate support for the necessary means to those ends.

In Chicago's case, the CMLRP and its successful implementation are the necessary support; to understand the policy, it is necessary to understand the CMLRP. Therefore, the next section begins with a discussion of the CMLRP, emphasizing the characteristics which determine the compatibility of the program both to the implementation mandates of the promotion policy as well as to the district and school achievement goals. An analysis of the promotion policy follows, primarily in terms of the policy's effect on schools. This leads to a discussion of the implementation itself, concentrating on the activities and experiences of school staff during the implementation year. Finally, the changes experienced in classrooms and schools are related to the effectiveness characteristics identified by educational research.

The Chicago Mastery Learning Reading Program (CMLRP)

The CMLRP, which was developed by the Chicago Public Schools, is a K-8 system of instructional materials for teaching basic reading and thinking skills. The materials consist of teacher manuals and accompanying student books containing learning units in two domains: comprehension and word attack/study skills. Each learning unit contains the elements necessary for mastery learning instruction: initial instructional activities, including student practice activities; formative tests to distinguish students who have mastered the unit from those who have not; alternate re-teaching activities which explain the topic in different ways to students who did not master the first time; a re-test for these students, and both enrichment and extension activities for students who

initially master the unit. What makes the materials unique and Chicago's policy possible, however, is not the mastery learning framework, but the method of development and field-testing. As a result of applying the principles of mastery learning theory to the process of development, program staff were able to guarantee classroom success under reasonable and appropriate conditions of school organization and instruction.

The method of development is called criterion-referenced field-testing. Bloom (1976) states that with the appropriate "quality of instruction," 80% of each class should be able to master each learning unit. So the developers set that proportion as the criterion of success for each unit of each grade level. When working with a particular grade level, a team of writers worked with eight to twelve classrooms representing a broad range of abilities for that grade. Each classroom was somewhat different in terms of the size, ability level, and variability of the group, as well as in the capability or style of the teacher. But the goal was to produce instructional units which teachers could use under natural conditions and which would bring at least 80% of the students in each class to mastery. When these results were not obtained on the criterion-referenced tests included as part of each unit, it was the instructional materials and not the tests that were revised and re-tested. As a result, each of the 158 instructional units in the CMLRP was field-tested until it demonstrated practicability and criterion-referenced success in real classrooms.

To create such materials, the developers had to accommodate a number of aspects of instruction and classroom organization not addressed by mastery learning theory. It was in adapting to these realities that the program developers anticipated the problems of school improvement. Some of the critical problems were:

1) Reading Instruction: Two aspects of the CMLRP primarily differentiate it from traditional reading materials: (1) the volume and detail of teacher

presentations, explanations, error corrections, and (2) the amount, repetition, and sequence of student activities. Children simply needed more practice and more teaching than they were getting. This finding suggested both the need for direct instruction and the need for academic feedback that surface as important variables in the classroom effectiveness research.

2) Group Instruction: As the amount of student-teacher interaction increased in both the presentation of teaching activities and the correction of student activities, it was no longer possible to work in individualized or small group arrangements. For efficiency, it became necessary for the teacher to work first with the whole class, using the re-teach cycle to provide more individualized assistance to those who required it. This change led the developers to a number of important discoveries, not the least of which was that both teachers and students seemed to work well and enthusiastically in whole class instruction, a surprise to all. As a result of working with the wider range of acquired skills represented in a larger group, it was necessary and valuable to build prerequisite instruction into each unit. This was accomplished through a special unit sequencing model, in which the activities in each unit proceed through a hierarchical series of steps, from the simple to the complex on a number of dimensions, leading to mastery at the criterion level. With such units, teachers can effectively handle a large group even with a fair latitude in abilities. Whole class instruction was to prove essential for implementation and appears as a characteristic related to success in some but not all studies of school and classroom effectiveness.

3) High and Low Ability Groups: At the start, the developers did not expect that the same materials would work with groups of students at different ability levels. Having worked with students from well-below to above-grade level suggested that lower ability students might need different activities

or at least different numbers of activities. It turned out that all groups were able to successfully work through the materials as written, but not in the same amount of time. High ability groups worked through the materials swiftly, often independently or with minimal teacher assistance. Few of these students required re-teaching, and those who did required less additional time than in lower ability groups. In the lower ability groups, the progress was slower for three reasons: (1) teachers were initially required to provide more explanation and examples, (2) after the student activities, teachers frequently had to go over the activity in directed error correction (academic feedback), and (3) more students required additional instruction. The developers had, of course, come upon the critical time dimension emphasized in the research. More importantly, their instructional system could meet the needs of a wide range of students by varying time and instruction instead of curriculum or success. (The phrase "wide range" needs to be qualified by pointing out that there are limits. Some students, those in the lowest achieving percentile ranks, are functioning at so low an instructional level that they require placement in materials below the grade appropriate for their age.)

4) Instructional Progress and Standardized Test Scores: In observing field-test classrooms and examining relevant standardized test scores, the developers discovered that the standardized gains from progress in the CMLRP were related to the volume of material that was successfully completed by the class, and not to the initial ability of the students. When a fast class completed the grade level of materials with 80% mastery, the average classroom gain was roughly one year on the standardized test. When a slower class completed the same materials with the same success rate, the gain of that class was also a year. If the teacher did not complete the material, or settled for a lower success rate, the standardized gain decreased. Thus,

achievement could be controlled by controlling the amount of content covered and by setting a required success rate. Teachers could therefore be required to vary the allocated time as well as the directed instruction and academic feedback to maintain these characteristics.

What all this means is that the amount of achievement that can be expected from a group of students is not determined by the prerequisite knowledge and learning skills that the students bring to class. Rather, it is a function of the amount and quality of teaching and learning that they experience during the school year, where quality refers to the degree to which students receive instruction appropriate to their needs. Of course, these statements are not incompatible with the normal achievement results expected and obtained. But with the CMLRP, teachers are provided the means for meeting more children's needs, thus making it possible to sever the typical pre-/post- relationships on a broader, citywide scale.

A typical CMLRP classroom functions as follows:

1) Students are placed by general estimates of ability and grouped into typically-sized classrooms representing one or two age groups and no more than two to two and a half years in ability range.
2) Teachers instruct through the initial sequence of teaching and learning activities, extending or limiting presentation/explanation as they judge class needs. Similarly, they extend activity error correction, or academic feedback, through group presentation and discussion if required. The amount of time this sequence of activities takes varies directly with the size and variance of the group and inversely with the mean ability of the group.
3) Teachers administer the formative test to all students at the end of the initial sequence of instruction, identifying those who have mastered the unit and those who have not.
4) For those who do demonstrate mastery, a number of options are available,

including: peer tutoring, independent reading/literature projects, specific enrichment activities provided in CMLRP, and subject-related applications of the skills and concepts of the unit. In all of these activities, students work primarily independently of the teacher.

5) Students who do not demonstrate mastery work directly with the teacher in additional instructional activities provided in CMLRP. These provide alternative teaching approaches and learning cues, additional time on practice, and more direct academic assistance from the teacher. At the end of these activities, these students are re-tested for mastery. Those who pass the test have mastered the unit, equivalent to those who mastered it the first time.

6) Some students may not pass the second test. While the teacher will be aware of this and will try to provide the student additional practice with this concept/skill throughout the year, the entire class moves on to the next unit. Students are allowed to miss mastery on 20% of the units. If the students fail repeatedly, on student activities as well as tests, they are probably misplaced and working on too difficult an instructional level.

7) Over the course of the year, the teacher follows this procedure through each CMLRP instructional unit while simultaneously using reading materials (e.g., basals, trade books, library books, content texts) to practice reading and to apply reading and thinking skills. In addition, the teacher monitors the time allocation and pace of instruction to ensure that all the units in a grade level are completed during the year.

If all of these steps are accomplished, the teacher can expect that the mean achievement of the class will be about one year gain on a standardized test; the variance of post-scores will be lower than that of pre-scores, and the correlation of pre-scores to gain should be near zero. If this happens in every classroom, the school will be successful and effective.

The Promotion Policy

The purpose of the promotion policy was (1) to return the Chicago Public Schools to a graded structure, (2) to implement the CMLRP as the basis of instruction and learning assessment, and (3) to define performance standards in the CMLRP as the basis of promotion or retention at the end of each grade. The goal, however, was not to "flunk" students, but rather to define standards of performance for students, teachers, and principals, so that they all would do what was necessary to ensure that the learning believed to be possible would in fact occur. Rather than being a negative statemnnt, the policy is quite optimistic.

With exceptions for special education students and bilingual students receiving instruction in their native tongue, the policy indicates that the CMLRP is to be used for all students.* Teachers are to teach with the CMLRP, and they are to use the criterion-referenced tests (included as part of the materials) to keep track of individual student progress. This progress is monitored by both the teacher and the principal on administrative monitoring forms included as part of the CMLRP. When progress is unsatisfactory, responsibility is clearly defined as that of the principal. He/she is directed to:

- make certain that the instructional materials are available and appropriate;
- ensure that classrooms are organized to promote learning;
- establish tutoring programs for students needing assistance (using volunteer, cross-age, student tutors as well as parent, business, and university support programs);
- call in support personnel to assist teachers who need help meeting the needs of children.

Only if all else fails would the decision be made to retain a student. And this decision is not merely that the child "repeat a grade," but that the

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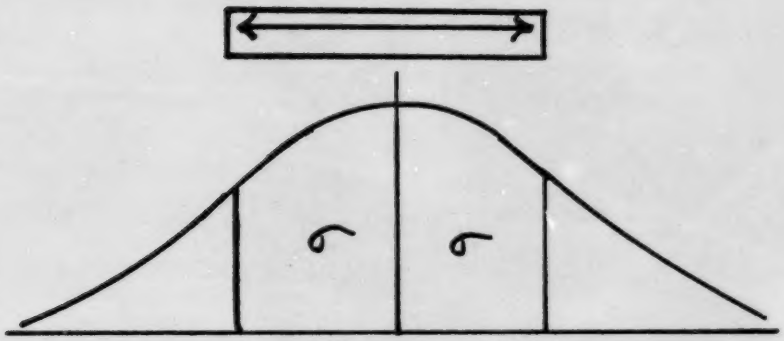
* Actually, the policy says that schools which exceed the minimum CMLRP standards do not have to use the program. In practice, all schools were required to participate.

child is provided an additional year of instructional time in an instructional support program as determined by the school. The assumption throughout this process is that some students need more time and help and that all students can succeed.

The policy is clear about what is expected with regard to the CMLRP and promotion, but it is considerably more cryptic about the definition of the graded organization. There are two references to the fact that the CMLRP was to be implemented within a "graded organizational structure." The CMLRP is itself organized into grade levels of materials, and the policy does indicate the number of units in each grade students must master to be promoted to the next grade. But this limited discussion fails to address the critical questions related to making the transition from an ungraded to a graded structure. Are all 13-year-olds now eighth-graders, including those who cannot function in an eighth-grade book? What about the 13-year-old, or so-called eighth-grader, who is reading in the CMLRP instructional grade six materials? If that student masters all 14 of the sixth-grade units, should that student be promoted or retained? No discussion is provided.

The only other reference to "grade" is in a chart at the back of the policy. This shows for each grade in school, the grade expectancy expressed in grade equivalents (where years are shown by units and months by tenths of units, e.g., 3.4 is the reading equivalent of a student at the fourth month of third grade) and what is called the "average reading grade expectation range." This range is supposed to represent the "normal" part of a normal distribution, that is, from one standard deviation above to one standard deviation below the mean, as indicated on the following page.



There are two points of interest about the chart. First, since at the upper age cycles the distance between the lower boundary and the mean is more than twice that between the mean and the upper boundary, it is clear that these numbers are not what they are purported to be. Second, there are four separate paragraphs throughout the policy emphasizing that such standardized test scores should not be used in isolation to make arbitrary cutoff decisions about grade promotion/retention (one paragraph is on the same page as the chart). Ironically, this chart and the arbitrary cutoff points it determines, became the key to placement, school organization, and the successful transition to using the CMLRP in a graded structure. But to understand how or why that would be so, it is necessary to follow the steps of school staffs in implementing the policy, to see what instructional issues and problems had to be addressed and how the promotion policy was used as a guide in this process.

Implementation

In their extensive review of the implementation of curriculum and instruction innovations, Fullan and Pomfret (1977) conclude that most programs simply are not implemented extensively or effectively. In particular, they are critical of centralized policies which, they say, "do not have a strong influence on implementation because they fail to address those factors most critical for implementation." In Chicago, by making the implementation of the CMLRP the sole

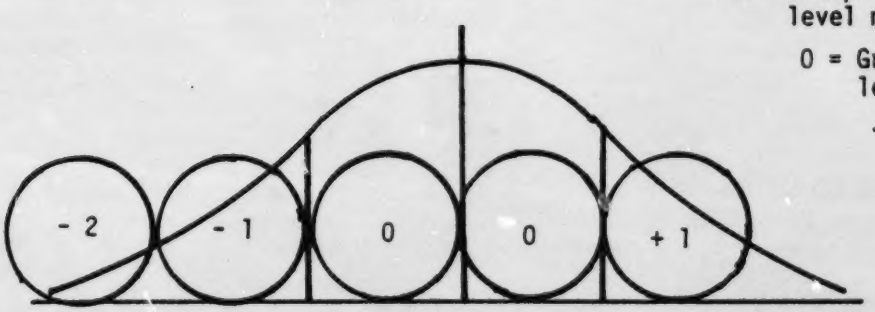
basis of reading instruction and student promotion in the elementary schools, the Board of Education provided an atypically powerful incentive for implementation. But if incentives were sufficient for effective implementation of innovations, then change might be more evident in education. Chicago school personnel were encouraged and enabled to implement the CMLRP and the promotion policy precisely because these tools are based on the factors most critical to school success, which are the same factors that are critical for implementation.

Placement and Grouping. The first practical step in implementing the CMLRP in a graded structure of school organization was placement and grouping activities. Aside from unanswered questions regarding the meaning of grades, it was necessary to decide which grade level book each child should work in and how best to organize children in classrooms. In addressing this problem, principals experienced a tension between two opposing forces or principles of placement, and the arbitrary standardized test cutoff points proved to be an excellent mechanic for integrating these two principles around a decision point. On the one hand, both teachers and principals wanted to disappoint (and fight with) as few students and parents as possible. Therefore, there was a need to allow all students to work in materials appropriate to their age-grade level, independent of reading ability. On the other hand, because of the concept of student "frustration level," teachers were in the habit of placing students in lower level materials relative to their test scores. Therefore, they perceived the age-appropriate materials as "too difficult" and wanted to place the majority of students in books that were from one to three years below grade level. This would have meant, of course, that at the end of the year the majority of students would have been retained because they had failed to work in, let alone succeed in, the materials for their grade level.

Because of some of the instructional properties of the CMLRP described previously, it was possible to resolve this dilemma by using the standardized

cutoff points in an integrated strategy of placement, grouping, and instruction. What made it possible to encourage 430 different schools to employ this placement/grouping strategy was the use of a centrally-determined, common formula for allocating the initial orders of books for each school. Therefore, when schools attempted less adequate or efficient placement and organization decisions, they rarely had the books they wanted. Program staff then had the opportunity to work with school staffs to train them in the decision-making procedures.

The standardized cutoff was critical because the placement procedure is based on standardized estimates of ability which are used as indices of instructional need. The normal distribution of scores is perceived as a distribution of need, with the cutoff score marking the lowest ability level of students who can work in a particular grade level of materials and still have their instructional needs met by the teacher. Below that level, students' needs will likely require a lower difficulty level of materials.



Circles Denote Instructional Ability Groups

+ 1 = Group uses above grade level materials

0 = Group uses grade level materials

- 1 = Group uses materials one level below grade level

- 2 = Group uses materials two levels below grade level

Principals and teachers were asked to perceive the distribution of scores for a grade level as in the above diagram. Here any limited range of scores represents a group of children who have similar abilities/needs. The question then is how far above or below the norm is the group. When the group is above the normal range as indicated in the promotion policy, students may require materials at a level higher than their grades. Within the normal range, which

often extends to one and a half years below the grade level mean, students can use the appropriate grade level materials, though a group below the mean may require greater instructional time. Students whose ability levels fell below the cutoff points require materials below grade level. Without additional time allocations or increases in the pace of instruction, these students would be retained at the end of the year.

Assessment by Instruction. In addition to this method of placement and grouping, principals were also advised on how to monitor and revise placement decisions, because it was understood that standardized test scores contain considerable error when used for individual decision-making. In general, principals and teachers were advised to "assess by instruction." When students are working on materials that are too simple or too difficult, teachers can be aware of it by attending to the classroom behaviors and success patterns of the students. Teachers were advised to watch for these signs in the first two to four weeks of school, and to reassign and regroup children in that period until they felt that they had placed each child in as instructionally efficient a setting as possible. Principals were also advised that teachers have considerable influence on success. In one classroom where the test scores indicate that students might be a little low in ability for a given level of materials, the teacher's determination and effort can make learning possible. In another room, where the teacher does not believe in the students, the same group of children might fail miserably.

Meeting Students' Needs. In grouping, the discussion is of instructional needs because the instructional goals have been set in the promotion policy. Each child must complete the grade level set of learning units and must demonstrate mastery on 80% of those units. The policy determines both the required content coverage and the success rate, while at the same time requiring teachers and principals to organize time and instructional assistance to meet students'

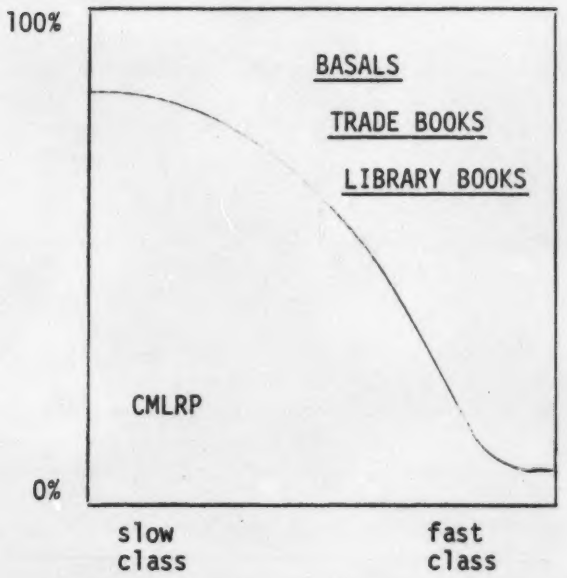
needs. In addition, one of the stated goals in the policy is to identify students who are below, at, or above grade level and to provide instruction according to their needs. Using this policy, the CMLRP, and these placement/grouping procedures, it is possible to provide a differentiated instructional experience to different categories of students. And, unlike tracking procedures, the strategies are related to the concept of need, not ability, so that strategies can be designed to reduce the differences in ability and not to enhance them.

Students who are above level are not those with scores within a few months of the mean; they are the students whose scores are above the top cutoff point in the promotion policy. These students are expected to achieve at high levels independent of the instructional program. Some CMLRP materials are usually used with these students for structure in the language arts program and for the learning strategies instruction they provide. In some cases, selected units or higher grade level units are used. Although determination of the instructional program for high achieving students is local, most high achieving schools use the CMLRP and with good results.

The category of on-level students includes the 68% of all students who fall within one standard deviation above or below the mean. For these students, the total language arts program consists of two complementary components: (1) the CMLRP materials appropriate for the age-grade designation, and (2) appropriate grade-level reading materials, e.g., basal readers, trade books, library books. By differentiated time allocation of these two components, teachers can meet the wide range of instructional needs represented in the category. And by using the promotion requirements as a guideline, the teacher can constantly monitor and adjust the curriculum pace to accommodate the children's needs.

Within this concept, it is appropriate to perceive the differences between the on-level groups in terms of learning rate. As the mean test score of the group decreases, as the group size increases, and as the group variance

Time Allocated to Reading



increases, the group will need more time to complete the CMLRP materials at the appropriate level of success. Such groups will spend a higher proportion of their reading time in the CMLRP as indicated in the above diagram, though, of course, students who achieve mastery on the first test will spend more time in reading activities. However, as all students experience successful interactions with materials of a given difficulty, their level of performance changes. These changes are detectable in terms of a decrease in how difficult the group finds the units to be and how long it takes to complete them. Thus, by initially allocating sufficient time to the CMLRP to provide the necessary teaching, and by modifying the pace of instruction to take advantage of student learning and growth, the teacher is able to use time effectively over the year to meet student needs.

For students whose ability level is too low for them to work in the appropriate age-grade material (below-level students), there are a number of strategies used to help them catch up. One of these strategies is retention, which both provides for an additional year of teaching and learning and allows for grouping

students of more similar abilities. But without appropriate instructional strategies, retention would be a game. The full range of strategies include "demand instruction" placement, increased time allocation for CMLRP, and accelerated advancement. All of these strategies are based on the assumption that with increased instructional time and assistance, students with very low standardized test scores can be brought to within the low normal range within one to two years of instruction.

To counteract the notion of a student frustration level, the term "demand instruction" was coined to describe a strategy of placement in which below-level students work in materials of a level expected to be do-able but difficult, requiring substantial teacher assistance. Typically, this means placing the student in a book with grade designation one or two years above the student's test scores. This difficulty level is intended to place some demand on the students and to stimulate the development of their reading ability.

To accommodate the increased student need, the time allocated to reading for these students was extended 50% or even doubled. Almost all reading time was devoted to CMLRP instruction, so that these groups were required to use social studies, science, and library time to practice reading in relevant material. As students began to work in one level of materials with relative ease, instead of spending less time on CMLRP while completing the level, the group moved on to the next level of difficulty mid-year. In this way, students were once again working on a demand level.

Monitoring. The role of the principal on the instructional management team in this process is to monitor and intervene when necessary. The promotion policy dictates which indicators should be monitored, and the CMLRP includes an administrative monitoring system to assist in the process. As classrooms complete learning units, teachers record achievement of students (mastery/non-mastery) on a classroom progress chart and simultaneously send a summary report to the

principal. The report indicates the classroom, the grade level, the unit number, and both the number of students in the room and the number who mastered the unit. By monitoring the success rate of the group in comparison to both the hypothesized 80% mastery rate and to other teachers in the school using the same grade level of materials, the principal has a rough indicator of the quality of instruction. By monitoring the rate of unit completion in relation to other classrooms and in relation to the instructional goal (to complete the book), the principal has an indicator of the quantity of instruction, which determines the group's opportunity to learn.

Intervention. Intervention can take place at the level of the teacher, the group, or the individual student. Sometimes the principal determines that the teacher is not meeting student needs; some teachers let students virtually teach themselves, doing little presentation or providing no academic feedback. In this case, principals are expected to use inservice training and pressure to change the teacher's understanding of his/her role. When the teacher is doing an adequate job but the group is still having difficulty, the group itself can be changed. If a few students are having difficulty and holding back the group, they can be provided with additional, extra-group time and tutorial assistance, or perhaps be moved to a more compatible group. If the group as a whole is having difficulty, the principal can alter the time allocations as well as support the teacher with increased resource allocation. Whatever the solution, the identification of the problem is almost unavoidable by the information made available through the monitoring system.

The last intervention, as indicated previously, is the end-of-year decision to promote or retain students. The promotion policy states that only students who have met the minimum mastery requirements (generally 80% of the units) are to be promoted to the subsequent grade. However, decisions are to be made on an individual basis. Students at grade four, for example, are to master 19 out

of 24 units for promotion. But a child who misses the first seven units and then passes 17 in a row surely has mastered grade four. So if students are close to meeting the minimum requirements, principals have discretion. When students have mastered a fair amount of the material, but still require more work at that grade level, they may be programmed into a summer school program to erase the deficit. But when students have mastered very little, or more likely, when they have been working in below-grade level materials, they are retained for an additional year. This does not preclude the possibility of a future double-promotion to the original class, but this would require extraordinary classroom performance.

After the promotion/retention decisions, the records on student performance are used to determine the grouping and building organization plan for the following school year. So, from the original placement and grouping decisions, through all the year of teaching and schooling, to the definition of the instructional plan for next year, the CMLRP serves as a tool and provides guidelines for teachers and principals in implementing classroom and school effectiveness.

The CMLRP and the Characteristics of Effectiveness

The goal of the previous discussion was to show how the CMLRP helps school staffs engage in instruction-related activities and make decisions so as to maximize the characteristics of effectiveness identified by the research. The same basic information can be restated in terms of the characteristics themselves: opportunity to learn, including content coverage and test-curriculum congruence, and academic learning time, as a function of allocated time, engaged time, and success rate. Grouping/placement strategy, a practically derived characteristic not emphasized in the research, is also discussed. The relationship between these characteristics and the CMLRP is outlined in the chart on the next page.

The CMLRP and the Characteristics of Effectiveness

Characteristic	Classroom Effectiveness	School Effectiveness
Expectations	(1) The CMLRP defines both criterion-referenced and norm-referenced expectations, under defined conditions of instruction, at both the classroom and school levels. These expectations are independent of previous achievement and, therefore, of home environment factors. (2) The CMLRP also defines observable, realistic, and explicit expectations for student changes in ability over the school year and the relationship of those changes to teaching behaviors and instructional time.	
Content Coverage	Each grade level of CMLRP materials defines the content equivalent of a year of teaching and learning. By pacing the instruction so as to complete the level within the school year, the teacher can assure content coverage.	The principal can exert maximum instructional leadership by insisting that and assisting teachers to meet these instructional goals. He/she can assist by increasing the time allocation, providing tutorial assistance, or regrouping.
Curriculum Test Congruence	There is a precisely defined relationship between progress in the CMLRP and standardized test scores: - when individuals complete a grade level of CMLRP with 80% mastery of units, the average gain equals one year on the standardized test, - when a class finishes a grade level of materials with 80% mastery, the class gain equals one year.	This relationship facilitates instructional planning by relating student inputs (initial abilities) through curriculum and instruction to goals. It also increases instructional efficiency by allowing for easy transition of new students into the program.
Grouping	The CMLRP defines principles of grouping, based on whole group instruction, where group characteristics (size, variance, mean deficit) can be related to instructional goals, time allocations, and teaching strategies. This facilitates classroom management without stigmatizing low achievers for whom compensatory strategies can be adopted.	These principles of grouping facilitate and systematize the building organization by defining groups with homogeneous instructional needs. This grouping pattern increases instructional efficiency in the school while reemphasizing academic orientation.
Academic Learning Time #1: Success Rate	By providing prerequisite instruction though sequencing and learning strategies, the CMLRP provides classrooms with the mechanisms to maintain the success rate which the teacher can control by varying the amount of directed instruction and academic feedback and correctives.	Through the administrative monitoring system included in the CMLRP, principals can constantly assess classroom success rate and student success rate. This feedback system can be used to determine staff development needs.
Academic Learning Time #2: Engaged Time	The provision of prerequisite instruction as well as academic feedback/correctives maximize success rate which naturally increases engaged time. The teacher can use engaged time and success rate as measures of instructional adequacy and can adjust the allocated time and instructional pacing to maintain engaged time.	The principal can monitor the adequacy of allocated time by monitoring a combination of classroom success rate and unit completion rate.
Promotion/ Retention	The definition of instructional and achivement promotion standards provides teacher and student motivation. But for students who are retained, allocated time is increased.	The promotion policy defines achievement expectations and reinforces the academic orientation of the school. It also enables schools to meet the needs of low achievers by providing an additional year of teaching time and facilitating grouping and instruction.

One of the less referenced school effectiveness studies identifies two more abstract characteristics or criteria related to school success that can be applied to any aspect of the classroom, school, or district instructional program. Venesky and Winfield (1979) compared effective and ineffective schools serving low SES, minority students in Delaware. Their discussion of the differences is in terms of how the activities of staff relate to "instructional efficiency," defined as a function of two major building-wide characteristics: (1) instructional adaptability, or the degree to which instruction is adapted to meet the needs of individual students, and (2) consistency of instruction, or the degree to which there is stability of the program and compatibility across grade levels. So important are these general characteristics that Venesky and Winfield conclude that:

> ...the emphasis in reading instruction needs to be shifted away from instructional methods and teacher accountability and onto the principal's leadership role and the efficiency of the entire building's instructional program.

It therefore seems appropriate to discuss the CMLRP in terms of the ways and extent to which the CMLRP increases instructional efficiency.

Within a classroom, adaptability refers to the degree to which the teacher is able to meet the instructional needs of the range of student abilities represented in the group. This aspect of the CMLRP has been discussed in detail, showing how the field-tested sequence of instructional activities, in conjunction with the teacher's directed instruction, provides the learning cues and student practice opportunities required by the majority of the students. In addition, the reteaching cycle following the formative test provides further opportunities to adapt instruction to individual needs, by giving additional instruction to those who need it and more enriched instruction and application of skills for those who are able.

The way in which the criterion-referenced field-testing method made it possible to develop materials adaptable to meet a wide variety of student needs

was also discussed. What was not discussed was the degree to which principles of instructional efficiency influenced the process. In the development of each unit, staff started with a teaching objective as represented by a criterion-referenced test. The development task was to develop a sequence of teaching and learning activities which would lead 80% of the class to mastery of this test. The determination of the content of these activities was derived through a task analysis of the test into component skills and their prerequisites. But the actual specification of each activity, the number of activities, and the difference in degree of difficulty between adjacent activities was determined by pedagogical instinct and practical trial-and-error. The goal was instructional efficiency: making the increase in difficulty between activities small enough so that students could achieve success in each activity (with reasonable effort), while minimizing the length and number of activities to make it possible to complete a year's worth of instruction in a year's time. As a result, the CMLRP has a consistency of instruction which is often missing in traditional instruction. Students often find that certain instructional activities seem unnecessary or unrelated to the main part of traditional instruction, while other critical activities are too difficult because of a lack of sufficient explanation or prerequisite instruction. With the CMLRP, each activity and unit is necessary for the year's instruction, and the sum of these is sufficient for a year's growth. Based on Chicago's experience, it appears that at the classroom level, adaptability and efficiency of instruction can be one and the same.

At the school level, instructional consistency refers to the organization and coordination of both instructional objectives and strategies across the various grade levels and classrooms. According to Venesky and Winfield, the concern with regard to consistency is:

> ...if the skills taught at each grade level and the approaches used to teach these skills were selected independently by each teacher, the chances are increased for either wasted time through unnecessary repetition or confusion and frustration through missing prerequisites.

Adaptability, at the school level, refers to the degree to which accommodations are made to provide variations in time, material, and teaching to meet varying student needs within a grade level and at each level in the school. In general, adaptability refers to the grouping strategies and the instructional plans based on these strategies.

Using any one instructional program throughout a school would improve consistency over using programs determined at the grade or classroom level. But using the CMLRP reinforces consistency in the operation of a school's instructional program on a number of dimensions.

1. Curriculum: In addition to being based on a developmental hierarchy of objectives and providing a consistent K-8 instructional approach, the CMLRP includes the teaching of cognitive prerequisites within each learning unit and the teaching of specific learning strategies. These latter are cognitive skills which help students "learn to learn" so that they are less dependent on both the consistency and adaptability of instruction.

2. Classroom Implementability: Because the CMLRP is relatively easy for a teacher to learn to use well, and because the principal can be aware and make amends when the teacher is not doing well, the CMLRP enhances consistency of teaching across classrooms within the school. An analysis of test scores from a pilot school which had implemented the CMLRP schoolwide found just such consistency as a major effect, represented by a reduced variance among classroom gains (Katims & Jones, 1981).

3. School and District Implementability: Organizing a school for instruction is a task with too few degrees of freedom. There are rarely enough teachers and classrooms to contain the number of groups which emerges naturally. Reducing the number of groups to the number of teachers leads to uneveness in the "teachability" of the groups. By allowing greater latitude in the definition of group "teachability," and by allowing principals to vary time and

instructional arrangements instead of materials, the task of organizing the building into a consistent set of groups for which the teachers can reasonably adapt instruction is greatly simplified with the CMLRP.

Similarly, the implementation of the CMLRP citywide has increased the instructional efficiency of the district. In the central office, citywide planning and policymaking, staff development, and instructional monitoring efforts are based on the CMLRP and implemented efficiently across Chicago's twenty districts. But the biggest contribution to consistency comes when students, teachers, or principals transfer from one school to another. Because of the consistency of the instructional program across the city, the disruption caused by the move is minimized: students are placed in a room working near the same unit in the same instructional material, teachers do not have to be retrained except in the local variations and customs, and principals can become familiar with the program in the new school without the traditional loss of one year's effectiveness. Also, when teachers are absent, substitutes use the same program wherever they work in the city to continue the instruction as planned for the day.

Implications

During the first year, using the CMLRP citywide within the structure of the promotion policy, the Chicago Public Schools demonstrated a significant increase in achievement. The achievement results of this implementation are discussed in some detail in a companion paper (Katims & Jones, 1983), but briefly: the average standardized test gain increased by 8%, whereas it had been virtually constant for a number of years. With the exception of grades three and four, where the results are confounded with a test-scaling problem, the average student in Chicago gained just about one year--the national norm and Chicago's achievement goal. When one recalls that this average is based

on over 300,000 students, the increase represents a huge volume of absolute gain. Criterion-referenced results internal to the CMLRP showed that across the city, students mastered units at the hypothesized 80% level. And in extensive administrative observations and teacher interviews involving thousands of teachers and principals, staff expressed both overwhelming enthusiasm for the program and greatly increased feelings of efficacy. These results support the belief that Chicago's approach to school improvement did improve the effectiveness of both classrooms and schools. In addition, these results have implications both for the continued research on school effectiveness and on the practice of schooling, particularly on school improvement efforts.

For Research. It has been emphasized that the practical experience of implementing a particular approach to educational effectiveness in Chicago depended on dimensions of schools and instruction not highlighted by research. In their excellent reassessment of effectiveness evidence, Madaus et al. (1980) offer an explanation of this discrepancy, pointing out that school researchers have not had

> much time to consider the precise school-based factors which might contribute most to scholastic achievement, or the analytic models that might best represent how schools function.

In their opinion, better understanding of the workings of schools would yield "empirically-based hypotheses on the role of variables in the school context" which would allow researchers to escape the "theoretical vacuum" in which they conduct school research. On the basis of the Chicago experience described previously, two such hypotheses are advanced: (1) that curriculum and instruction materials affect and may limit teaching and classroom effectiveness as well as school organization and effectiveness, and (2) that the system for organizing students into optimally effective instructional groups--and how this system relates to curriculum/instruction materials, student ability, and

instructional plans--determines the limits of classroom and school effectiveness. Research addressing these hypotheses would greatly increase the value of effectiveness research.

In addition, research on school effectiveness would be more compelling if it traced the path from ineffectiveness to effectiveness. To practitioners, the research is convincing in demonstrating that there are good schools and bad schools, and that there can be good schools even in settings and serving populations which would not be expected to succeed. However, the research is relatively unconvincing as to whether or not each school can become effective. One reason for this is that there have been no longitudinal studies to show schools (and particularly districts) becoming effective where they previously were not. It is easy to understand why this is the case. Longitudinal studies are very costly and difficult to sustain, and to all the complications of research they add the dimension of time and change. But to be convinced that change is possible, let alone to be compelled to change, Missouri-minded educators will at a minimum require to be shown a description of the stages of improvement, and at a maximum, they would like concrete guidelines on how to cause change and improvement.

Traditionally in educational research, when longitudinal research is unfeasible, cross-sectional designs are used to provide quasi-longitudinal inferences. In the case of school effects research, the "sections" which could be crossed are degrees of effectiveness. One reason for the unbelievability of school effects research is that it has focused on comparing schools from the opposite ends of the school effectiveness distribution. With more information on schools in between these extremes, it might be possible to better understand the relative and combined effects of the variables and characteristics already discovered, as well as to better convince practitioners. Goodlad's (1983) recent study of schooling has begun this effort, and as his findings fuel further research, discrepancies between research and practice may fade.

For Practice. The implications of the Chicago experience for school practice are relatively simple. First, it is clear that school improvement is possible. Chicago's achievement levels are still below national norms. But the average gain was just slightly below level and is expected to reach the goal of a year's gain in a year's time during the second year of implementation, due to further refinements in the program and practice. If the Chicago Public Schools can maintain normal achievement growth levels, serving large populations of minority and low SES students, any school district could. Second, it is clear that this success derives not merely from changes in attitude or of goals, but from extensive and difficult changes in school organization, instructional planning, and day-in, day-out teaching behaviors. Third, but perhaps not so clear, teachers and principals require both powerful incentive and practicable tools to make these changes. If schools and districts are serious about providing quality education to all students and about achieving educational effectiveness, they will have to do more than mandate achievement or exhort staff to be effective. Instead, they will have to mandate effectiveness and provide the tools to achieve it.

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